

1 1. A coated nanocrystal capable of light emission, comprising:
2 a core selected from the group consisting of CdX, where x = S, Se, Te, and
3 mixtures thereof, said core being a member of a substantially monodisperse particle
4 population; and
5 an overcoating of ZnY, where Y = S, Se, uniformly deposited thereon, said coated
6 core characterized in that when irradiated the particles emit light in a narrow spectral
7 range of no greater than about 60 nm at full width half max (FWHM).

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9 2. A coated nanocrystal capable of light emission, comprising:
10 a core selected from the group consisting of CdX, where x = S, Se, Te, and
11 mixtures thereof, said core being a member of a substantially monodisperse particle
12 population; and
13 an overcoating of ZnY, where Y = S, Se, uniformly deposited thereon, said coated
14 core characterized in that the nanocrystal exhibits less than a 10% rms deviation in
15 diameter of the core.

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17 3. The coated nanocrystal of claim 1, wherein the spectral range is not
18 greater than about 40 nm at full width half max (FWHM).

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20 4. The coated nanocrystal of claim 1, wherein the spectral range is not
21 greater than about 30 nm at full width half max (FWHM).

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23 5. The coated nanocrystal of claim 1, wherein the coated nanocrystal exhibits
24 photoluminescence having quantum yields of greater than 30%.

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26 6. The coated nanocrystal of claim 1, wherein the coated nanocrystal exhibits
27 photoluminescence having quantum yields in the range of about 30 to 50%.

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1 7. The coated nanocrystal of claim 2, wherein the coated nanocrystal
2 exhibits less than a 5% rms deviation in size of the core.

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4 8. The coated nanocrystal of claim 1 or 2, wherein the overcoating comprises
5 one to two monolayers of ZnY.

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7 9. The coated nanocrystal of claim 1, wherein the narrow spectral range is
8 selected from the spectrum in the range of about 470 nm to about 620 nm.

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10 10. The coated nanocrystal of claim 2, wherein the particle size of the core is
11 selected from the range of about 20Å to about 125 Å.

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13 11. The coated nanocrystal of claim 1 or 2, wherein the nanocrystal further
14 comprises an organic layer on the nanocrystal outer surface.

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16 12. The coated nanocrystal of claim 11, wherein the organic layer is
17 comprised of moieties selected to provide compatibility with a suspension medium.

18
19 13. The coated nanocrystal of claim 11, wherein the organic layer is
20 comprised of moieties selected to exhibit affinity for the outer surface of the
21 nanocrystal.

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23 ²¹
~~14~~. The coated nanocrystal of claim ²⁰~~13~~, wherein the organic layer comprises
24 a short-chain polymer terminating in a moiety having affinity for a suspending
25 medium.

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27 15. A method of preparing a coated nanocrystal capable of light emission,
28 comprising:

1 22. The method of claim 15, wherein the nanocrystal further comprises an
2 organic layer on the nanocrystal outer surface.

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4 23. The method of claim 22, wherein the organic layer is obtained by
5 exposing the nanocrystal to an organic compound having affinity for the nanocrystal
6 surface, whereby the organic compound displaces the coordinating solvent.

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